Photo by AT1(AW/NAC) Derrik D. Anderson

Thermal RU

By AE2(AW/NAC) Brock Corcoran

Our crew was rather melancholy on the morning of Feb. 1, 2003, and not in the best of moods to fly. As aviators, we felt a kinship with the crew of the space shuttle Columbia. However, we were scheduled for a 10-hour, random-track mission, and our E-6B mission had to go.

As acting flight engineer (FE), I noticed an unusual battery-voltage indication midway through the flight. The emergency-lighting batteries were charging and discharging at a high rate. I monitored the battery indications while the crew completed scheduled training. When their training was completed, we headed to our destination. After reaching our cruise altitude of FL 330, I continued to watch the battery voltage. When it reached 24 volts, I felt more comfortable.

I had left my seat for only a few minutes when the navigator called the FEs to the flight deck. The navigator had smelled smoke, from an electrical source, and had asked us to investigate. I immediately checked the battery voltage and headed to the forward-lower lobe, where the emergency-lighting batteries are located. Joined

by an in-flight technician (IFT), as the required safety observer, I checked the lighting-battery charger. It was hot to the touch but not hot enough to cause the odor.

The next stop on our troubleshooting, and just a few feet forward, was at the emergency-lighting batteries. These batteries were the culprits—they were smoking, and the smoke was rising through the floor of the flight deck, right at the navigator's feet. Realizing the chemical reaction in the batteries, I quickly headed to the flight deck to tell the other FE and the two pilots.

Thermal runaway is an electrochemical reaction that causes a battery to heat and possibly explode. The seriousness of this situation, while airborne, is obvious: We needed to land as soon as possible.

The fire bill was initiated, and everyone, now knowing what the problem was, headed to the hatch for the forward-lower lobe with emergency equipment. After securing power to the system, I went to the forward-lower lobe where I met the IFTs. The pilots initiated a rapid descent, while we disconnected the batteries and prepared them for removal from the aircraft upon landing.

With the situation a little more under control, a fire watch was posted, while everyone else on the plane prepared for landing. The crew got out their flashlights because, in case of another emergency, the lighting batteries would not operate. I also discussed with the IFTs the plan to remove the batteries once on deck.

After landing, events moved faster than I had expected. Before I knew it, we had called for the ground-evacuation checklist. One IFT went straight to the ground from the forward-lower lobe to open the radio-access door and to take the batteries from me as I removed them. The batteries quickly were moved a safe distance from the aircraft.

I thought our job was done. Because I had seen and dealt with similar emergencies, I headed toward one of the crash trucks to help. The crash crew was not familiar with the procedures to neutralize batteries in a thermal-runaway condition. Remembering what the NA 17-15BAD-1 states, I instructed one of the firefighters to get a 55-gallon drum and to fill it with water, then submerge the batteries.

A total team effort contributed to the safe handling of this situation. After a few hours of maintenance, the aircraft was ready for its next mission.

AE2(AW/NAC) Corcoran flies with VQ-4.

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